Novel Phenol Oxidizing
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GTCAATATGCTGTTCAAGTCATGGCAACTGGCAGCAGCCTCCGGGCTCCTGTCTGGAGTC MetLeuPheLysSerTrpGlnLeuAlaAlaAlaSerGlyLeuLeuSerGlyVa	60 18
CTCGGCATCCCGATGGACACCGGCAGCCACCCCATTGAGGCTGTTGATCCCGAAGTGAAG	120
lleuGlyIleProMetAspThrGlySerHisProIleGluAlaValAspProGluValLy	38
ACTGAGGTCTTCGCTGACTCCCTCCTTGCTGCAGCAGGCGATGACGACTGGGAGTCACCT	180
sThrGluValPheAlaAspSerLeuLeuAlaAlaAlaGlyAspAspAspTrpGluSerPr	58
CCATACAACTTGCTTTACAGGAATGCCCTGCCAATTCCACCTGTCAAGCAGCCCAAGATG	240
oProTyrAsnLeuLeuTyrArgAsnAlaLeuProIleProProValLysGlnProLysMe	78
ATCATTACCAACCCTGTCACCGGCAAGGACATTTGGTACTATGAGATCGAGATCAAGCCA	300
tllelleThrAsnProValThrGlyLysAspIleTrpTyrTyrGluIleGluIleLysPr	98
TTTCAGCAAAGGATTTACCCCACCTTGCGCCCTGCCACTCTCGTCGGCTACGATGGCATG	360
oPheGlnGlnArgIleTyrProThrLeuArgProAlaThrLeuValGlyTyrAspGlyMe	118
AGCCCTGGTCCTACTTTCAATGTTCCCAGAGGAACAGAGACTGTAGTTAGGTTCATCAAC	420
tSerProGlyProThrPheAsnValProArgGlyThrGluThrValValArgPheIleAs	138
AATGCCACCGTGGAGAACTCGGTCCATCTGCACGGCTCCCCATCGCGTGCCCCTTTCGAT	480
nAsnAlaThrValGluAsnSerValHisLeuHisGlySerProSerArgAlaProPheAs	158
GGTTGGGCTGAAGATGTGACCTTCCCTGGCGAGTACAAGGATTACTACTTTCCCAACTAC	540
pGlyTrpAlaGluAspValThrPheProGlyGluTyrLysAspTyrTyrPheProAsnTy	178
CAATCCGCCCGCCTTCTGTGGTACCATGACCACGCTTTCATGAAGACTGCTGAGAATGCC	600
rGlnSerAlaArgLeuLeuTrpTyrHisAspHisAlaPheMetLysThrAlaGluAsnAl	198
TACTTTGGTCAGGCTGGCGCCTACATTATCAACGACGAGGCTGAGGATGCTCTCGGTCTT	660
aTyrPheGlyGlnAlaGlyAlaTyrIleIleAsnAspGluAlaGluAspAlaLeuGlyLe	218
CCTAGTGGCTATGGCGAGTTCGATATCCCTCTGATCCTGACGGCCAAGTACTATAACGCC	720
uProSerGlyTyrGlyGluPheAspIleProLeuIleLeuThrAlaLysTyrTyrAsnAl	238
GATGGTACCCTGCGTTCGACCGAGGGTGAGGACCAGGACCTGTGGGGAGATGTCATCCAT	780
aAspGlyThrLeuArgSerThrGluGlyGluAspGlnAspLeuTrpGlyAspVallleHi	258
GTCAACGGACAGCCATGGCCTTTCCTTAACGTCCAGCCCCGCAAGTACCGTTTCCGATTC	840
sValAsnGlyGlnProTrpProPheLeuAsnValGlnProArgLysTyrArgPheArgPh	278
CTCAACGCTGCCGTGTCTCGTGCTTGGCTCCTCTACCTCGTCAGGACCAGCTCTCCCAAC	900
eLeuAsnAlaAlaValSerArgAlaTrpLeuLeuTyrLeuValArgThrSerSerProAs	298
GTCAGAATTCCTTTCCAAGTCATTGCCTCTGATGCTGGTCTCCTTCAAGCCCCCGTTCAG	960
nValArgIleProPheGlnValIleAlaSerAspAlaGlyLeuLeuGlnAlaProValGl	318
ACCTCTAACCTCTACCTTGCTGTTGCCGAGCGTTACGAGATCATTATTGACTTCACCAAC	1020
nThrSerAsnLeuTyrLeuAlaValAlaGluArgTyrGluIleIleIleAspPheThrAs	338
TTTGCTGGCCAGACTCTTGACCTGCGCAACGTTGCTGAGACCAACGATGTCGGCGACGAG	1080
nPheAlaGlyGlnThrLeuAspLeuArgAsnValAlaGluThrAsnAspValGlyAspGl	358
GATGAGTACGCTCGCACTCTCGAGGTGATGCGCTTCGTCGTCAGCTCTGGCACTGTTGAG	1140
uAspGluTyrAlaArgThrLeuGluValMetArgPheValValSerSerGlyThrValGl	378

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GACAACAGCCAGGTCCCCTCCACTCTCCGTGACGTTCCTTTCCCTCCTCACAAGGAAGG	1200
uAspAsnSerGlnValProSerThrLeuArgAspValProPheProProHisLysGluGl	398
CCCGCCGACAAGCACTTCAAGTTTGAACGCAGCAACGGACACTACCTGATCAACGATGTT	1260
yProAlaAspLysHisPheLysPheGluArgSerAsnGlyHisTyrLeuIleAsnAspVa	418
GGCTTTGCCGATGTCAATGAGCGTGTCCTGGCCAAGCCCGAGCTCGGCACCGTTGAGGTC	1320
1GlyPheAlaAspValAsnGluArgValLeuAlaLysProGluLeuGlyThrValGluVa	438
TGGGAGCTCGAGAACTCCTCTGGAGGCTGGAGCCACCCCGTCCACATTCACCTTGTTGAC	1380
lTrpGluLeuGluAsnSerSerGlyGlyTrpSerHisProValHisIleHisLeuValAs	458
TTCAAGATCCTCAAGCGAACTGGTGGTCGTGGCCAGGTCATGCCCTACGAGTCTGCTGGT	1440
pPheLysIleLeuLysArgThrGlyGlyArgGlyGlnValMetProTyrGluSerAlaGl	478
CTTAAGGATGTCGTCTGGTTGGGCAGGGGTGAGACCCTGACCATCGAGGCCCACTACCAA	1500
yLeuLysAspValValTrpLeuGlyArgGlyGluThrLeuThrlleGluAlaHisTyrGl	498
CCCTGGACTGGAGCTTACATGTGGCACTGTCACAACCTCATTCACGAGGATAACGACATG	1560
nProTrpThrGlyAlaTyrMetTrpHisCysHisAsnLeuIleHisGluAspAsnAspMe	518
ATGGCTGTATTCAACGTCACCGCCATGGAGGAGAAGGGATATCTTCAGGAGGACTTCGAG	1620
tMetAlaValPheAsnValThrAlaMetGluGluLysGlyTyrLeuGlnGluAspPheGl	538
GACCCCATGAACCCCAAGTGGCGCGCCGTTCCTTACAACCGCAACGACTTCCATGCTCGC	1680
uAspProMetAsnProLysTrpArgAlaValProTyrAsnArgAsnAspPheHisAlaAr	558
GCTGGAAACTTCTCCGCCGAGTCCATCACTGCCCGAGTGCAGGAGCTGGCCGAGCAGGAG	1740
gAlaGlyAsnPheSerAlaGluSerIleThrAlaArgValGlnGluLeuAlaGluGlnGl	578
CCGTACAACCGCCTCGATGAGATCCTGGAGGATCTTGGAATCGAGGAGTAA	1791
uProTvrAsnArgLeuAspGluIleLeuGluAspLeuGlvIleGluGlu	594

FIG.\_1B

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		•	,			
CTGGCTAGCC	TCACTTGGTA	GACAGCCCTG	ACAGCCTCAC	TGGCTGGGGG	TCGAAAGGCC	60
AGTCAATATC	TTGGTCACTG	CTAATAGTTC	CTTGCTACGC	GCAAAAAGCT	CCTTGCCGAA	120
GGGGCACAGA	CTATCAAGTG	AGACATATAG	GATGCATGTC	TTTCATAGCC	ACAGTTAGGG	180
TGGTGACCTA	CTCGAAGAGG	CCCCGACTTG	CATGCATACG	ACATGTCGCT	TCCATGCAAC	240
ATGTATGCGC	ACATCGGCGA	TCAGGCACCC	TCTGCATGCA	GAATAGAACC	CCCCTGGTTT	300
CCTTTTGTTT	CTTTTCCTTT	CTCAACGACG	CGTGAGCGTG	GTTAACTTGA	GCAAGGCCGA	360
GTGGTCTGTT	CACGAGGTTA	CCATCGAACT	CTCTTCTTTC	CCAATCATGA	CCTGCCCCCC	420
GAGTTTAGCC	CCCATCACGG	CTGTGAAATC	CACTTCGATA	ATCCTAGCCT	AGTGCTACTC	480
TTCAATAGTT	GCTCCTGATG	GGGCACTTTG	GTCACATTGC	CTTGGTTYCT	CCTACCTCGT	540
	ATCAAGCCTC					600
	CACCTTCGCG					660
GGAGTTTTGG	TCTATTTGTC	ATGATCACCT	CACATTCACT	AGATCACGGA	TCCTGGAAGA	720
GGGTGTGGAA	GCCAGACCAG	CTTGTCCCTG	TTCTTGCAGA	CTCAGGTCAG	CTCCTAGCGG	780
CTATCACAGC				CCCTTTTCAT		840
TGCCTAATTT	GCGCTATCTC					900
GCTGAAGCAT	CGTGAGATCT	ATAAAGGTCT	CCGAATCCTC	GGTGAAGTCA	GAATCGTCTC	960
TCCACACCAG	TCAACAACAA	GCTTCTTTCT	CTTACAGCTT	AGCCTGAGCA	CATTCACAGA	1020
	TCTTTTCGTC					1080
	TGGAGTCCTC					1140
	AGTGAAGACT					1200
	GTCACCTCCA					1260
	AACTAACTCT					1320
	CTTTGATTTT					1380
	CTGTCACCGG					1440
	TGAGTTTGCT					1500
	CCACCTTGCG					1560
	ATGTTCCCAG					1620
	CGGTCCATCT					1680
	CCTTCCCTGG					1740
	GGTACCATGA			GCTACGAGCC		1800
TTGGCTACCT	TTGGCTAACC			TGAGAATGCC		1860
	CTACATTATC			TCTCGGTCTT		1920
	CGATATCCCT					1980
	CGAGGGTGAG				GTCAACGGAC	2040
AGCCATGGCC		GTCCAGCCCC		TTTCCGATTC	CTCAACGCTG	2100
CCGTGTCTCG	TGCTTGGCTC			CTCTCCCAAC	GTCAGAATTC	2160
	CATTGCCTCT			CCCCGTTCAG		2220
TCTACCTTGC		CGTTACGAGA		TATGCCCTCC		2280
ATGAGTCAAG	AACTCTAAGA	CTAACACTTG	TAGACTTCAC	CAACTTTGCT	GGCCAGACTC	2340
TTGACCTGCG	CAACGTTGCT	GAGACCAACG	ATGTCGGCGA	CGAGGATGAG	TACGCTCGCA	2400
CTCTCGAGGT	GATGCGCTTC	GTCGTCAGCT	CTGGCACTGT	TGAGGACAAC	AGCCAGGTCC	2460
CCTCCACTCT	CCGTGACGTT	CCTTTCCCTC	CTCACAAGGA	AGGCCCCGCC	GACAAGCACT	2520
TCAAGTTTGA	ACGCAGCAAC	GGACACTACC	TGATCAACGA	TGTTGGCTTT	GCCGATGTCA	2580
ATGAGCGTGT	CCTGGCCAAG	CCCGAGCTCG	GCACCGTTGA	GGTCTGGGAG	CTCGAGAACT	2640
CCTCTGGAGG	CTGGAGCCAC	CCCGTCCACA	TTCACCTTGT	TGACTTCAAG	ATCCTCAAGC	2700
GAACTGGTGG	TCGTGGCCAG	GTCATGCCCT	ACGAGTCTGC	TGGTCTTAAG	GATGTCGTCT	2760
GGTTGGGCAG	GGGTGAGACC	CTGACCATCG	AGGCCCACTA	CCAACCCTGG	ACTGGAGCTT	2820
ACATGTGGCA	CTGTCACAAC	CTCATTCACG	AGGATAACGA	CATGATGGCT	GTATTCAACG	2880
TCACCGCCAT	GGAGGAGAAG	GGATATCTTC	AGGAGGACTT	CGAGGACCCC	ATGAACCCCA	2940
AGTGGCGCGC	CGTTCCTTAC	AACCGCAACG	ACTTCCATGC	TCGCGCTGGA	AACTTCTCCG	3000
CCGAGTCCAT	CACTGCCCGA	GTGCAGGAGC	TGGCCGAGCA	GGAGCCGTAC	AACCGCCTCG	3060
ATGAGATCCT	GGAGGATCTT	GGAATCGAGG	AGTAAACCCC	GAGCCACAAG	CTCTACAATC	3120
GTTTTGAGTC	TTAAGACGAG	GCTCTTGGTG	CGTATTCTTT	TCTTCCCTAC	GGGGAACTCC	3180
	GCGATGTGAA					3240
TCATTACCGC	CCACTTGTAC	CTATTCGATT	CTTGTTCAAA	CTTTTCTAGT	GCGAGAGTGT	3300
CCATAGTCAA	GAAACGCCCA	TAGGGCTATC	GTCTAAACTG	AACTATTGTG	TGGTCTGTGA	3360
CGTGGAGTAG	ATGTCAATTG	TGATGAGACA	CAGTAAATAC	GGTATATCTT	TTCCTAGGAC	3420
TACAGGATCA	GTTTCTCATG	AGATTACATC	CGTCTAATGT	TTGTCCATGA	GAGTCTAGCT	3480
AAGGTTGAGA	ATGCATCAGA	CGGAATCATT	TGATGCTCTC	AGCTCGTATT	ACCGATGTAA	3540
GACAAGTTAG	GTAAGTTGCT	TGGTATCCGA	AAATGACTCA	GGCTCCCTCA	TTAGGTTGCA	3600
	TTCAGCAACT	CATGGGTGTT	GGGACCAAAT	CATCCATACC	TGATTTTGAT	3660
AACTGACCTG	GGTCAAT					3677

FIG.\_2

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1	MFKHTLGAAALSLLFNSNAVQA.SPVPETSPATGHLFKRV	39
1	MLFKSWQLAAASGLLSGVLGIPMDTGSHPIEAVDPEVKTEVFADSLLAAA	50
40	AQISPQYPMFTVPLPIPPVKQPRLTVTNPVNGQEIWYYEVEIKPFT	85
51	GDDDWESPPYNLLYRNALPIPPVKQPKMIITNPVTGKDIWYYEIEIKPFQ	100
86	HQVYPDLGSADLVGYDGMSPGPTFQVPRGVETVVRFINNAEAPNSVHLHG	135
101	QRIYPTLRPATLVGYDGMSPGPTFNVPRGTETVVRFINNATVENSVHLHG	150
136	SFSRAAFDGWAEDITEPGSFKDYYYPNRQSARTLWYHDHAMHITAENAYR	185
151	SPSRAPFDGWAEDVTFPGEYKDYYFPNYQSARLLWYHDHAFMKTAENAYF	200
186	GQAGLYMLTDPAEDALNLPSGYGEFDIPMILTSKQYTANGNLVTTNGELN	235
201	GQAGAYIINDEAEDALGLPSGYGEFDIPLILTAKYYNADGTLRSTEGEDQ	250
236	SFWGDVIHVNGQPWPFKNVEPRKYRFRFLDAAVSRSFGLYFADTDAIDTR	285
251	DLWGDVIHVNGQPWPFLNVQPRKYRFRFLNAAVSRAWLLYLVRTSSPNVR	300
286	LPFKVIASDSGLLEHPADTSLLYISMAERYEVVFDFSDYAGKTIELRNLG	335
301	IPFQVIASDAGLLQAPVQTSNLYLAVAERYEIIIDFTNFAGQTLDLRNV.	349
336	GSIGGIGTDTDYDNTDKVMRFVVADDTTQPDTSVVPANLRDVPFPSPTTN	385
350	AETNDVGDEDEYARTLEVMRFVVSSGTVE.DNSQVPSTLRDVPFPPHKEG	398
386	.TPRQFRFGRTGPTWTINGVAFADVQNRLLANVPVGTVERWELINAGNGW	434
399	PADKHFKFERSNGHYLINDVGFADVNERVLAKPELGTVEVWELENSSGGW	448
435	THPIHIHLVDFKVISRTSGNNARTVMPYES.GLKDVVWLGRRETVVVEAH	483
449	SHPVHIHLVDFKILKRTGGRGQVMPYESAGLKDVVWLGRGETLTIEAH	496
484	YAPFPGVYMFHCHNLIHEDHDMMAAFNATVLPDYGYNATVFVDPMEELWQ	533
497	YQPWIGAYMWHCHNLIHEDNDMMAVFNVTAMEEKGYLQEDFEDPMNPKWR	546
534	ARPYELGEFQAQSGQFSVQAVTERIQTMAEYRPYAAADE	572
547	AVPYNRNDFHARAGNFSAESITARVQELAEQEPYNRLDEILEDLGIEE	594

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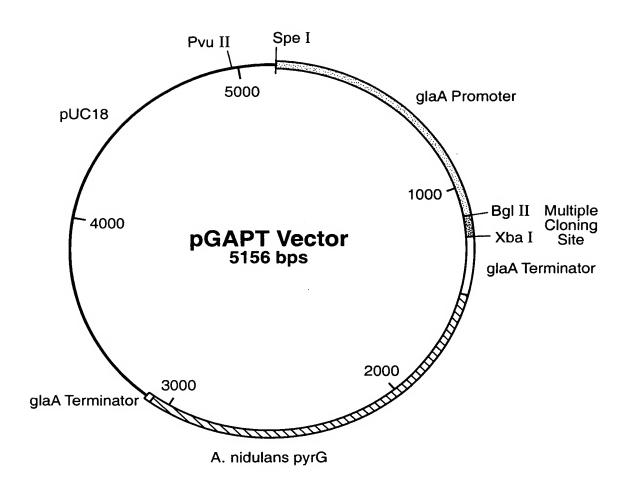


FIG.\_4

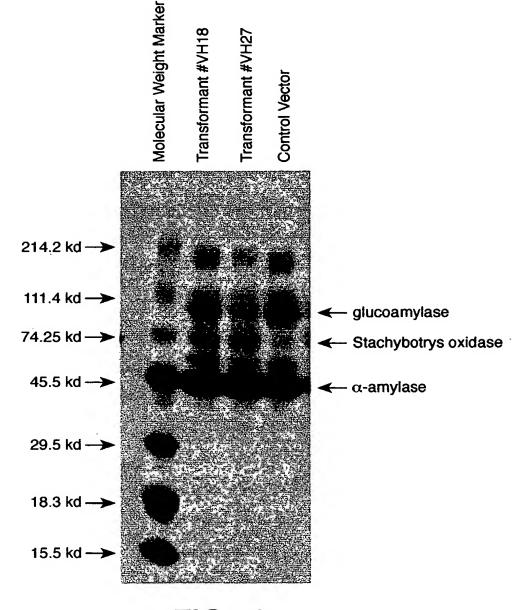
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AGATCTAATA	TGCTGTTCAA	GTCATGGCAA	CTGGCAGCAG	CCTCCGGGCT	CCTGTCTGGA	60
GTCCTCGGCA	TCCCGATGGA	CACCGGCAGC	CACCCCATTG	AGGCTGTTGA	TCCCGAAGTG	120
AAGACTGAGG	TCTTCGCTGA	CTCCCTCCTT	GCTGCAGCAG	GCGATGACGA	CTGGGAGTCA	180
CCTCCATACA	ACTTGCTTTA	CAGGTGAGAC	ACCTGTCCCA	CCTGTTTTCC	CTCGATAACT	240
AACTCTTATA	GGAATGCCCT	GCCAATTCCA	CCTGTCAAGC	AGCCCAAGAT	GTATGTCTTT	300
GATTTTCTAC	GAAGCAACTC	GGCCCCGACT	AATGTATTCT	AGGATCATTA	CCAACCCTGT	360
CACCGGCAAG	GACATTTGGT	ACTATGAGAT	CGAGATCAAG	CCATTTCAGC	AAAGGGTGAG	420
TTTGCTCAGA	AACCTTGTGG	TAATTAATCA	TTGTTACTGA	CCCTTTCAGA	TTTACCCCAC	480
CTTGCGCCCT	GCCACTCTCG	TCGGCTACGA	TGGCATGAGC	CCTGGTCCTA	CTTTCAATGT	540
TCCCAGAGGA	ACAGAGACTG	TAGTTAGGTT	CATCAACAAT	GCCACCGTGG	AGAACTCGGT	600
CCATCTGCAC	GGCTCCCCAT	CGCGTGCCCC	TTTCGATGGT	TGGGCTGAAG	ATGTGACCTT	660
CCCTGGCGAG	TACAAGGATT	ACTACTTTCC	CAACTACCAA	TCCGCCCGCC	TTCTGTGGTA	720
CCATGACCAC	GCTTTCATGA	AGGTATGCTA	CGAGCCTTTA	TCTTTCTTGG	CTACCTTTGG	780
CTAACCAACT	TCCTTTCGTA	GACTGCTGAG	AATGCCTACT	TTGGTCAGGC	TGGCGCCTAC	840
ATTATCAACG	ACGAGGCTGA	GGATGCTCTC	${\bf GGTCTTCCTA}$	${\bf GTGGCTATGG}$	CGAGTTCGAT	900
ATCCCTCTGA	TCCTGACGGC	CAAGTACTAT	AACGCCGATG	GTACCCTGCG	TTCGACCGAG	960
GGTGAGGACC	AGGACCTGTG	GGGAGATGTC	ATCCATGTCA	ACGGACAGCC	ATGGCCTTTC	1020
${\bf CTTAACGTCC}$	AGCCCCGCAA	GTACCGTTTC	${\bf CGATTCCTCA}$	ACGCTGCCGT	GTCTCGTGCT	1080
TGGCTCCTCT	ACCTCGTCAG	GACCAGCTCT	CCCAACGTCA	GAATTCCTTT	CCAAGTCATT	1140
${\tt GCCTCTGATG}$	CTGGTCTCCT	TCAAGCCCCC	GTTCAGACCT	CTAACCTCTA	CCTTGCTGTT	1200
GCCGAGCGTT	ACGAGATCAT	${\bf TATTGGTATG}$	CCCTCCCTC	TCACGAATGA	GTCAAGAACT	1260
CTAAGACTAA	CACTTGTAGA	CTTCACCAAC	TTTGCTGGCC	AGACTCTTGA	CCTGCGCAAC	1320
GTTGCTGAGA	CCAACGATGT	CGGCGACGAG	GATGAGTACG	CTCGCACTCT	CGAGGTGATG	1380
CGCTTCGTCG	TCAGCTCTGG	CACTGTTGAG	GACAACAGCC	AGGTCCCCTC	CACTCTCCGT	1440
${\bf GACGTTCCTT}$	TCCCTCCTCA	CAAGGAAGGC	CCCGCCGACA	AGCACTTCAA	GTTTGAACGC	1500
AGCAACGGAC	ACTACCTGAT	CAACGATGTT	GGCTTTGCCG	ATGTCAATGA	GCGTGTCCTG	1560
GCCAAGCCCG	AGCTCGGCAC	CGTTGAGGTC	TGGGAGCTCG	AGAACTCCTC	TGGAGGCTGG	1620
AGCCACCCCG	TCCACATTCA	CCTTGTTGAC	TTCAAGATCC	TCAAGCGAAC	TGGTGGTCGT	1680
GGCCAGGTCA	TGCCCTACGA	GTCTGCTGGT	CTTAAGGATG	TCGTCTGGTT	GGGCAGGGGT	1740
GAGACCCTGA	CCATCGAGGC	CCACTACCAA	CCCTGGACTG	GAGCTTACAT	GTGGCACTGT	1800
CACAACCTCA	TTCACGAGGA	TAACGACATG	ATGGCTGTAT	TCAACGTCAC	CGCCATGGAG	1860
GAGAAGGGAT	ATCTTCAGGA	GGACTTCGAG	GACCCCATGA	ACCCCAAGTG	GCGCGCCGTT	1920
CCTTACAACC	GCAACGACTT	CCATGCTCGC	GCTGGAAACT	TCTCCGCCGA	GTCCATCACT	1980
GCCCGAGTGC	AGGAGCTGGC	CGAGCAGGAG	CCGTACAACC	GCCTCGATGA	GATCCTGGAG	2040
GATCTTGGAA	TCGAGGAGTA	GTCTAGA				2067

**FIG.\_5** 



HOUSELY TO LYCE

FIG.\_6